



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

# TRANSACTIONS

OF THE

AMERICAN

PHILOSOPHICAL SOCIETY,

HELD AT

PHILADELPHIA,

FOR PROMOTING

*USEFUL KNOWLEDGE.*

VOLUME II.

---

*Reprinted with the permission of the  
American Philosophical Society*

KRAUS REPRINT CORPORATION  
New York  
1966

**Printed in U.S.A.**

# TRANSACTIONS

OF THE

AMERICAN

PHILOSOPHICAL SOCIETY,

HELD AT

PHILADELPHIA,

FOR PROMOTING

*USEFUL KNOWLEDGE.*

VOLUME II.

---

PHILADELPHIA:

PRINTED AND SOLD BY *ROBERT AITKEN*, AT POPE'S HEAD  
IN MARKET STREET.

---

M.DCC.LXXXVI.

---

LIST OF THE OFFICERS  
OF THE  
*AMERICAN PHILOSOPHICAL SOCIETY,*

Held at PHILADELPHIA, for promoting useful Knowledge,

For the Year 1786.

PATRON. His Ex<sup>cy</sup> the President of the Supreme Executive Council of the Commonwealth, for the time being.

PRESIDENT. His Excellency Dr. Benjamin Franklin, Esquire, L. L. D F. R. S. &c. &c.

VICE-PRESIDENTS. { Rev. Dr. John Ewing, Provost of  
the University of Pennsylvania.  
Rev. Dr. William White.  
Samuel Vaughan, Esq.

SECRETARIES. { Dr. James Hutchinso.  
Mr. Robert Patterfon, Professor of  
Mathematics in the University  
of Pennsylvania.  
Rev. Dr. Samuel Magaw, Vice-Pro-  
vost of the University of Penn-  
sylvania.  
Dr. John Foulk.

CURATORS. { Dr. Samuel Duffield.  
Dr. Barnabas Binney.  
William Bradford, Esq. Attorney  
General of Pennsylvania.

TREASURER. { The Honorable Francis Hopkin-  
son, Esq. Judge of the Admiralty  
in Pennsylvania.

COUN-

## COUNSELLORS.

{ The Hon. Thomas M'Kean, Esquire,  
 L. L. D. Chief Justice of the Su-  
 preme Court of Pennsylvania.  
 The Hon. George Bryan, Esquire, a  
 Justice of the Supreme Court of  
 Pennsylvania.  
 Sieur Barbé de Marbois.  
 Mr. Samuel Caldwell.  
 Jared Ingersoll, Esq.  
 Jonathan Bayard Smith, Esq.  
 Rev. Mr. Robert Blackwell.  
 David Rittenhouse, Esq.  
 Dr. Benjamin Rush, Professor of Che-  
 mistry in the University of Penn-  
 sylvania.  
 Dr. John Jones.  
 Dr. Adam Kuhn, Professor of Mate-  
 ria Medica in the University of  
 Pennsylvania.  
 Rev. Mr. George Duffield.

LIST of MEMBERS of the AMERICAN PHILOSOPHICAL SOCIETY, elected since the Publication of the First Volume of Transactions, viz. since the 18th of January, 1771.

A  
 JOSEPH Astolinge, Esq. of Georgia.

B

Mr. Gerard Banker.  
 Dr. William Bryant, of New-Jersey. \*  
 Mr. James Bringham.  
 Honorable Thomas Bee, Esq. of South-Carolina.  
 John Beale Boardley, Esq. of Maryland.  
 Rev. Jeremy Belknap, of New-Hampshire.  
 Dr. Barnabas Binney.  
 Rev. Mr. Robert Blackwell.

William

Note, Those Members whose places of residence are not specified, are of Philadelphia; and those marked with an \* are deceased.

# LIST OF MEMBERS.

XXV

William Bradford, Esq. Attorney-General of Pennsylvania.

## C

Dr. John Carlon.

Rev. Manasseh Cutler, of Ipswich, Massachusetts.

## D

Sharp Delany, Esq.

Rev. Dr. Robert Davidson, of Carlisle.

Mr. John Dunlap.

## E

Dr. Jonathan Elmer, of New-Jersey.

Joseph Ellicott, Esq. Bucks county. \*

Andrew Ellicott, Esq. of Maryland.

## F

Mr. George Fox.

Dr. John Foulk.

## G

Mr. George Gauld, of Pensacola.

Isaac Gray, Esq.

George Gray, Esq.

Mr. Archibald Gamble, Professor of English and Oratory, University, Philadelphia. \*

Dr. Samuel Powell Griffiths.

## H

Dr. James Hutchinson.

Thomas Hutchins, Esq. Geographer to the United States.

Ebenezer Hazard, Esq. Postmaster-General.

Samuel Huntington, Esq. of Connecticut. \*

Rev. Dr. Just. Hen. Christ. Helmuth, Prof. of the Germ. and Oriental Languages, University, Philadelphia.

Thomas Hayward, jun. Esq. of South-Carolina.

## I

Dr. Walter Jones, of Virginia.

Dr. John Jones, of Maryland.

Jared Ingerfoll, Esq.

His Excellency Thomas Jefferson, Esq. of Virginia, Minister Plenipotentiary to the Court of France.

## K

Rev. Dr. John C. Kunze, of New-York.

## L

Mr. Jesse Lukens. \*

Henry Laurens, Esq. of South-Carolina.

Rev. Mr. William Ludlam, of Leicester.

## d

Dr. James

xxvi      L I S T   O F   M E M B E R S .

Dr. James Lloyd, of Boston.

M

Mr. Archibald M'Cleau, of York county.

Capt. John Matrefon, of New-York.

Timothy Matlack, Esq.

Dr. George Millegan, of South-Carolina.

James M'Clurg, M. D. Williamsburgh, Virginia.

Mr. Benjamin Morgan.

Rev. Dr. Samuel Magaw, Vice-Provost of Univer. Phila.

Hon. Dr. James M'Henry, Esq. of Baltimore.

Rev. Dr. James Madifon, President of the College of William and Mary, Virginia.

Rev. Mr. Henry Muhlenberg, of Lancaster.

P

Dr. John Perkins, of Boston, Massachusetts.

Dr. Thomas Park.

Mr. Robert Patterfon, Prof. Math. Univer. Philadelphia.

Hon. Mann Page, Esq. of Fredericksburgh, Virginia.

Thomas Paine, Esq. of Bordentown.

Charles Pettit, Esq.

R

Mr. Bernard Romans, of Pensacola.

S

Dr. Hugh Shiell. \*

Jonathan Bayard Smith, Esq.

Jonathan Dickinson Sergeant, Esq.

Rev. Dr. Samuel Smith, Vice-President of the College in New-Jersey.

T

Dr. James Tilton, of Dover.

Mr. John Ternant.

V

Samuel Vaughan, Esq.

Mr. John Vaughan.

W

His Excellency General Washington, Virginia.

Rev. Samuel Williams, L. L. D. Hol. Prof. Moral and Nat. Philos.  
College of Cambridge, Massachusetts.

Dr. Nicholas Way, of Wilmington.

George Wall, jun. Esq. of Bucks county.

Hon. Anthony Wayne, Esq. Gen. in the Armies of the United States.

Mr. Benjamin Workman, Teacher of Math. University, Philadelphia.

FOREIGN



# LIST OF MEMBERS. xxvii

## FOREIGN MEMBERS.

### A

Monfieur le Marquis d'Angeville, of Paris.  
 Dr. Adams, of Barbadoes.  
 Lieut. Stephen Adye, of the Royal Artillery.

### B

Dr. Forbern Bergman, Prof. Math. Stockholm.  
 Major Frederick F. S. de Brahm, Triers.  
 His Excellency M. J. Peter Van Berckel, Minister Plenipotentiary  
 from the United Provinces of the Netherlands.  
 Frederick Eugene Francis Baron de Beelen Bertholf, Imperial  
 Councillor of Commerce to the United States, Bruffels.

### C

Le Chevalier de Chastellux, Marshal of the Field in the Armies of  
 France, Chevalier of the Royal Military Order of St. Louis, and  
 one of the forty members of the French Academy.  
 Count de Campomanes, Fiscal of the Council of Castile.  
 Dr. Adair Crawford, Physician to St. Thomas's Hospital, London.  
 Dr. Coste.  
 Rev. Thomas Coombe, Ireland.  
 Daniel Coxe, Esq. England.

### D

Mr. Peter Dollond, of London.  
 Dr. Andrew Duncan, of Edinburgh.  
 Monfieur Daubenton, of the Royal Academy of Sciences at Paris.  
 Monfieur Dubourg, of Paris. \*  
 Chev. Danmours, Consul of France for the Southern Department.

### E

Hon. John Ellis, Esq. of Jamaica. \*  
 Hon. Bryan Edwards, Esq. of Jamaica.

### F

Le Marquis de la Fayette, Major General in the Armies of the  
 United States of America.  
 Abbé Fontana, Director of the Great Duke's Cabinet of Natural  
 History.

### G

Rev. Thomas Gibbons, D. D. of London.  
 Count de Guichen, Lieut. Gen. in the French Army.

### H

Hon. Samuel Gustavus Baron Hermelin, of Stockholm.

xxviii      L I S T   O F   M E M B E R S.

William Herschell, Esq. F. R. S. of Bath, England.

I

Dr. Hugh James, of Jamaica.

K

Timothy Baron de Kleingstedt, Councillor of State to the Empress of Russia.

Brigadier-General Thadeus Koscuzko.

L

Le Chev. de la Luzerne.

Monsieur Lavoisier, of the Academy of Sciences in Paris.

M

Monsieur Barbé de Marbois, Intendant of St. Domingo.

Lord Mahone.

Monsieur Macquer, of Paris. \*

Samuel Moore, Esq. of London.

Dr. Benjamin Mosley, of Jamaica.

Mr. John Hyacinth de Magellan, F. R. S. and Member of several Academies, London.

Christ. Fred. Michaelis, M. D. of Gottenburgh.

Mr. John Mandrillon, Merchant, Amsterdam.

P

Rev. Joseph Priestley, L. L. D. F. R. S. of Birmingham, England.

Rev. Richard Price, D. D. F. R. S. of London.

Dr. Robert Percival, Prof. Chym. Trinity College, Dublin.

Mr. William Parker, of London.

R

Monsieur le Roy, Vice-Director of the Academy of Sciences in Paris.

Monsieur le Roux.

Abbé Raynal.

Abbé Rosier, of the Academy of Sciences in Lyons.

S

Monsieur Süe, Professor Royal of Anatomy, &c. at Paris.

Monsieur Jean Baptiste Süe, Prof. Surgery in Paris.

Right Hon. Earl of Stanhope. \*

Mr. Alexander Small, of London.

Mr. James Six, of Canterbury. England.

V

Monsieur le Count de Vergennes, Minister of State for Foreign Affairs, France.

W

Fortunatus de Warris, Esq.

William Wright, M. D. F.R.S. in the Parish of Trelawney, Jamaica.

---

# C O N T E N T S

O F

## V O L U M E II.

N <sup>o</sup>	Page.
I. <i>A LETTER from Dr. B. Franklin, to Dr. Ingenhaufz, Physician to the Emperor, at Vienna, on the Causes and Cure of Smokey Chimneys,</i>	1
II. <i>Explanation of an Optical Deception, by Mr. Rittenhouse,</i>	37
III. <i>Description of the White Mountains in New-Hampshire, by the Rev. Mr. Jeremy Belknap,</i>	42
IV. <i>Description of a remarkable Rock and Cascade, near the Western Side of the Youghiogeny River, by Tho. Hutchins, Esq.</i>	50
V. <i>Letter to Mr. Nairne, of London, from Dr. Franklin, proposing a slowly sensible Hygrometer for certain Purposes,</i>	51
VI. <i>Description of a new Stove for burning of Pitcoal, and consuming all it's Smoke, by Dr. Franklin,</i>	57
VII. <i>A Theory of Lightning and Thunder Storms, by Andrew Oliver, Esq. of Salem, in the State of Massachusetts,</i>	74
VIII. <i>Theory of Water-Spouts, by Andrew Oliver, Esq.</i>	101
IX. <i>Experiments on Evaporation, and Meteorological Observations made at Bradfield in New-England, by the Rev. Samuel Williams, A. M.</i>	118
X. <i>A Letter from J. Madifon, Esq. to D. Rittenhouse, Esq. containing Meteorological Observations,</i>	123
XI. <i>Description of a Machine for measuring a Ship's Way thro' the Sea, by F. Hopkinson, Esq.</i>	159
XII. <i>Ac--</i>	

N <sup>o</sup>	Page.
XII. <i>Account of an Electrical Eel, or the Torpedo of Surinam,</i> by William Bryant, Esq.	166
XIII. <i>Observations on the Numb Fish, or Torporific Eel,</i> by Henry Collins Flagg, of South-Carolina,	170
XIV. <i>A Letter to David Rittenhouse, Esq. from John Page, Esq.</i> 173 <i>From David Rittenhouse, Esq. to John Page, Esq.</i> 175 <i>Concerning a remarkable Meteor seen in Virginia and Pennsylvania.</i>	
XV. <i>Description of the Grotto at Swatara,</i> by the Rev. Peter Miller, of Ephrata; communicated by William Barton, Esq.	177
XVI. <i>An Account of some Experiments on Magnetism, in a Letter to John Page, Esq. at Williamsburg, from Mr. Rittenhouse,</i>	178
XVII. <i>New Method of placing a Meridian Mark, in a Letter to the Rev. Dr. Ewing, Provost of the University.</i> By D. Rittenhouse, Esq.	181
XVIII. <i>Account of a Worm in a Horse's Eye,</i> by F. Hopkinson, Esq.	183
XIX. <i>An improved Method of Quilling a Harpsichord,</i> by F. Hopkinson, Esq.	185
XX. <i>Observations on a Comet lately discovered; communicated by David Rittenhouse, Esq.</i>	195
XXI. <i>Extract of a Letter from the Rev. Jeremy Belknap, containing Observations on the Aurora Borealis.</i>	196
XXII. <i>A Letter from J. Madison, Esq. to D. Rittenhouse, Esq. containing Experiments and Observations upon what are commonly called the Sweet Springs.</i>	197
XXIII. <i>A Letter from the Rev. Jeremy Belknap, on the preserving of Parsnips by drying.</i>	199
XXIV. <i>An Optical Problem, proposed by Mr. Hopkinson, and solved by Mr. Rittenhouse,</i>	201
XXV. <i>An</i>	

# C O N T E N T S.

xxx

No	Page.
XXV. <i>An Enquiry into the Cause of the Increase of Bilious and Intermitting Fevers in Pennsylvania, with Hints for preventing them.</i> By Benjamin Rush, M. D. Professor of Chemistry in the University of Pennsylvania,	206
XXVI. <i>An Account of the late Dr. Hugh Martin's Cancer Powder, with brief Observations on Cancers.</i> By Benjamin Rush, M. D. &c. &c.	212
XXVII. <i>Mayeri Observationes Astronomicæ,</i>	217
XXVIII. <i>Observations on the Cause and Cure of the Tetanus,</i> by Benjamin Rush, M. D. &c. &c.	225
XXIX. <i>Letter concerning Chimneys, addressed to His Excellency Benjamin Franklin, Esq. L. L. D. President of the State of Pennsylvania, and of the American Philosophical Society, &amp;c.</i> by Dr. Rufton,	231
XXX. <i>Observations on the annual Passage of Herrings,</i> by Mr. John Gilpin,	236
XXXI. <i>Observations on a Solar and Lunar Eclipse, communicated to the Society by M. M. de Grauchain, Major-General of the French Squadron,</i>	239
XXXII. <i>An Account of the Transit of Venus over the Sun, June 1769, as observed at Newbury, in Massachusetts; by the Rev. Samuel Williams, A. M.</i>	246
XXXIII. <i>An easy and accurate Method of finding a true Meridian Line, and thence the Variation of the Compass.</i> By Robert Patterson,	251
XXXIV. <i>Astronomical Observations, communicated by Mr. Rittenhouse,</i>	260
XXXV. <i>A Letter from Mr. Otto to Dr. Franklin, with a Memoir on the Discovery of America,</i>	263
XXXVI. <i>The antiseptic Virtues of Vegetable Acid and Marine Salt combined, in various Disorders accompanied with Putridity; communicated in a Letter to John Morgan, M. D.</i>	F. R. S.

N <sup>o</sup>	Page.
<i>F. R. S. and Professor of the Theory and Practice of Physic at Philadelphia, by William Wright, M. D. of Trelawney in Jamaica,</i>	284
XXXVII. <i>Medical History of the Cortex Ruber, or Red Bark; communicated to John Morgan, M. D. Professor of the Theory and Practice of Physic at Philadelphia, and F. R. S. London, &amp;c.</i>	289
XXXVIII. <i>A Letter from Dr. Benjamin Franklin to Mr. Alphonfus le Roy, Member of several Academies at Paris, containing sundry Maritime Observations,</i>	294
XXXIX. <i>Account of two Hearts found in one Partridge,</i>	33
XL. <i>Conjectures concerning Wind and Water Spouts, Tornados and Hurricanes. Communicated by Dr. John Perkins, of Boston, to John Morgan, M. D. &amp;c. &amp;c.</i>	335
XLI. <i>The whole Process of the Silk Worm, from the Egg to the Cocoon; communicated to Dr. John Morgan, &amp;c. at Philadelphia, in two Letters from Messrs Hare and Skinner, &amp;c. in London, July 27, 1774, and February 24, 1775,</i>	347
XLII. <i>The Art of making Anatomical Preparations by Corrosion. By John Morgan, M. D. &amp;c. &amp;c.</i>	366
XLIII. <i>Of a living Snake in a living Horse's Eye, and of other unusual Productions of Animals. By John Morgan, M. D. F. R. S. London, &amp;c.</i>	383
XLIV. <i>Some Account of a motley coloured, or pyed Negro Girl and Mulatto Boy, exhibited before the Society in the Month of May, 1784, for their Examination, by Dr. John Morgan, from the History given of them by their owner Monsr. le Vallois, Dentist of the King of France, at Guadaloupe in the West-Indies,</i>	392
XLV. <i>Extract of a Letter from Bernard Romans, of Pensacola, dated August 20, 1773, on an improved Sea-Compass,</i>	396